What is claimed is:

1. A method for forming a semiconductor device having a bump electrode, the method comprising:

providing an aluminum contact pad on a substrate, at least a portion of the aluminum contact pad being exposed through a dielectric layer on the substrate;

forming an aluminum layer on the dielectric layer and the portion of the aluminum contact pad exposed through the dielectric layer;

forming a nickel-vanadium layer on the aluminum layer;

forming a titanium layer on the nickel-vanadium layer;

selectively forming a gold bump on the titanium layer at a location corresponding to the aluminum contact pad; and

etching the aluminum layer, the nickel-vanadium layer and the titanium layer with the gold bump as a mask.

2. The method as claimed in claim 1, further comprising the step of cleaning the titanium layer.

3. The method as claimed in claim 2, wherein the cleaning step is conducted by treating the titanium layer with a cleaning medium

4. The method as claimed in claim 3, wherein the cleaning medium is HCl.

5. A semiconductor device having a bump electrode, comprising:

a substrate having a dielectric layer formed thereon;

an aluminum contact pad on the substrate wherein at least a portion of the aluminum contact pad is exposed through the dielectric layer on the substrate;

an aluminum layer formed on the portion of the aluminum contact pad;

a nickel-vanadium layer formed on the aluminum layer;

a titanium layer formed on the nickel-vanadium layer; and

a gold bump formed on the titanium layer.

6. The semiconductor device as claimed in claim 5, wherein the dielectric layer is a passivation layer.